Fodder and pasture plants.—At times it is difficult for the student of agriculture to obtain at once adequate botanical descriptions and cultural data of plants commonly used for fodder and pasture purposes, while the farmer is frequently poorly informed upon either phase of knowledge relating to the plants he is constantly growing. A recent volume by CLARK and MALTE[3] seems to be particularly well fitted to meet the needs of both student and farmer. Its botanical descriptions of the grasses and clovers usually cultivated are accurate but non-technical, while in addition it furnishes abundant data upon the geographical distribution, cultural conditions, habits of growth, and agricultural value of the plants discussed. Perhaps the best feature of the volume is the admirable series of colored plates depicting the species described with such accuracy that any one, even without botanical training, can have no difficulty in at once recognizing them. In this respect the volume is uniform with the *Farm weeds of Canada* previously noticed in this journal,[4] and it will form a valuable addition to the equipment of the teacher of agriculture as well as a convenient book of reference for the farmer.—GEO. D. FULLER.

Ferns of Washington.—Under this title FRYE and JACKSON[5] have published a small book which is a boon to those who wish to become familiar with the ferns of Washington. It includes the true ferns, water ferns, adders-tongues, grape ferns, horse tails, scouring rushes, club mosses, moss ferns, and quillworts. The writers find 66 species of pteridophytes in the state, of which 30 are Polypodiaceae. These species belong to 24 genera, of which 16 are Polypodiaceae. The work has a key to families, and keys to the genera and species. The families, genera, and species are all described. The habitat and the range of each species is given. In a state comprising such a diversity of regions as does Washington, the distribution within the state would add to the usefulness of the work. It is illustrated with 20 plates made from drawings and photographs, illustrating the principal species treated in the work. This publication will undoubtedly add greatly to the interest in the ferns and their allies in the Northwest.—GEORGE B. RIGG.

NOTES FOR STUDENTS

Biology of Fegatella.—Miss MAYBROOK[6] examined vegetative thalli of *Fegatella conica* found growing in a cavelike hole. In regions of greatest light intensity the thallus showed the structures common to *Fegatella*, but as the

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[3] CLARK, GEO. H., and MALTE, M. O., Fodder and pasture plants. 8vo. pp. 143. *pls. 27*. Ottawa: Dept. of Agric., Dominion of Canada. 1913. 50 cents. For sale by Superintendent of Stationery, Government Printing Bureau, Ottawa.

[4] BOT. GAZ. **50**:389. 1910.

[5] FRYE, T. C., and JACKSON, MABEL M., The Ferns of Washington. pp. 60. *pls. 20*. Seattle, Wash.: Lowman & Hanford. 1914. Reprinted from Amer. Fern Jour. **3**:65–83, 97–108. 1913; **4**:6–14, 41–57. 1914.

[6] MAYBROOK, ANNIE C., Note on the biology of *Fegatella conica*. New Phytol. **13**:243–249. *fig. 1*. 1914.

light intensity decreased the thallus decreased in size, the air chambers decreased in number per unit area, and chloroplasts appeared in the dorsal epidermal cells. In the region of least light intensity and in dripping water a form was found which showed neither air chambers, ventral scales, nor tuberculate rhizoids. Miss MAYBROOK concludes that the factors responsible for this condition of the thallus are diminished light intensity and excessive moisture. Since none of these plants were in fruit the question of identity naturally is of prime importance. The long series of recently conducted experiments on undoubted *Fegatella conica* by BRYAN in this laboratory show that under extreme conditions of moisture the air chambers can be somewhat modified. BRYAN eliminated neither air chambers nor ventral scales. The reviewer considers the presence of air chambers and ventral scales of such importance in undoubted Marchantiales that he hopes Miss MAYBROOK will place some of the plants under suitable conditions for fruiting in order that there may be no doubt of their identity.—W. J. G. LAND.

Notes from Florida.—HARSHBERGER[7] has written a popular sketch of his journey across the Everglades, promising later to give a detailed account of the plant formations studied. Attention is called to the great lack of scientific knowledge of this region. South Florida is regarded as that portion of the state south of 27°. Brief treatment is given the plant and animal life, agricultural possibilities, and other topics.

BESSEY[8] has given a brief description of the hammocks, as they are seen about Miami, contrasting them with the pine lands and with the Everglades. Reference is made to a number of the more interesting species, and the cause of the sharp contrast between the vegetation of the pine lands and that of the hammocks is discussed.

In a steamboat ride up the Apalachicola River, R. M. HARPER[9] noted a considerable change in the bank vegetation in the progress of the journey. Among the possible explanations suggested for this common phenomenon, the chief place is given to the probability that the upstream plants require or tolerate greater fluctuation in level than do the plants of the estuarine swamps, in which, of course, the seasonal changes in level are small.—H. C. COWLES.

An ecological study of weeds.—Weeds have been largely neglected by ecologists and phytogeographers, who for the most part have concerned themselves with the more primeval types of vegetation. For several years Miss BRENCHLEY has been making observations on the soil relations of weeds, and

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[7] HARSHBERGER, J. W., South Florida; a geographic reconnaissance. Bull. Geog. Soc. Phila. **10**:37–47. *figs. 10.* 1912.

[8] BESSEY, E. A., The hammocks and everglades of southern Florida. Plant World **14**:268–276. *figs. 2.* 1911.

[9] HARPER, R. M., The river-bank vegetation of the lower Apalachicola, and a new principle illustrated thereby. Torreya **11**:225–234. *fig. 1.* 1911.